



SPEC[®] CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Oracle Corporation SPARC T3-4

SPECfp[®]_rate2006 = 503

SPECfp_rate_base2006 = 476

CPU2006 license: 6

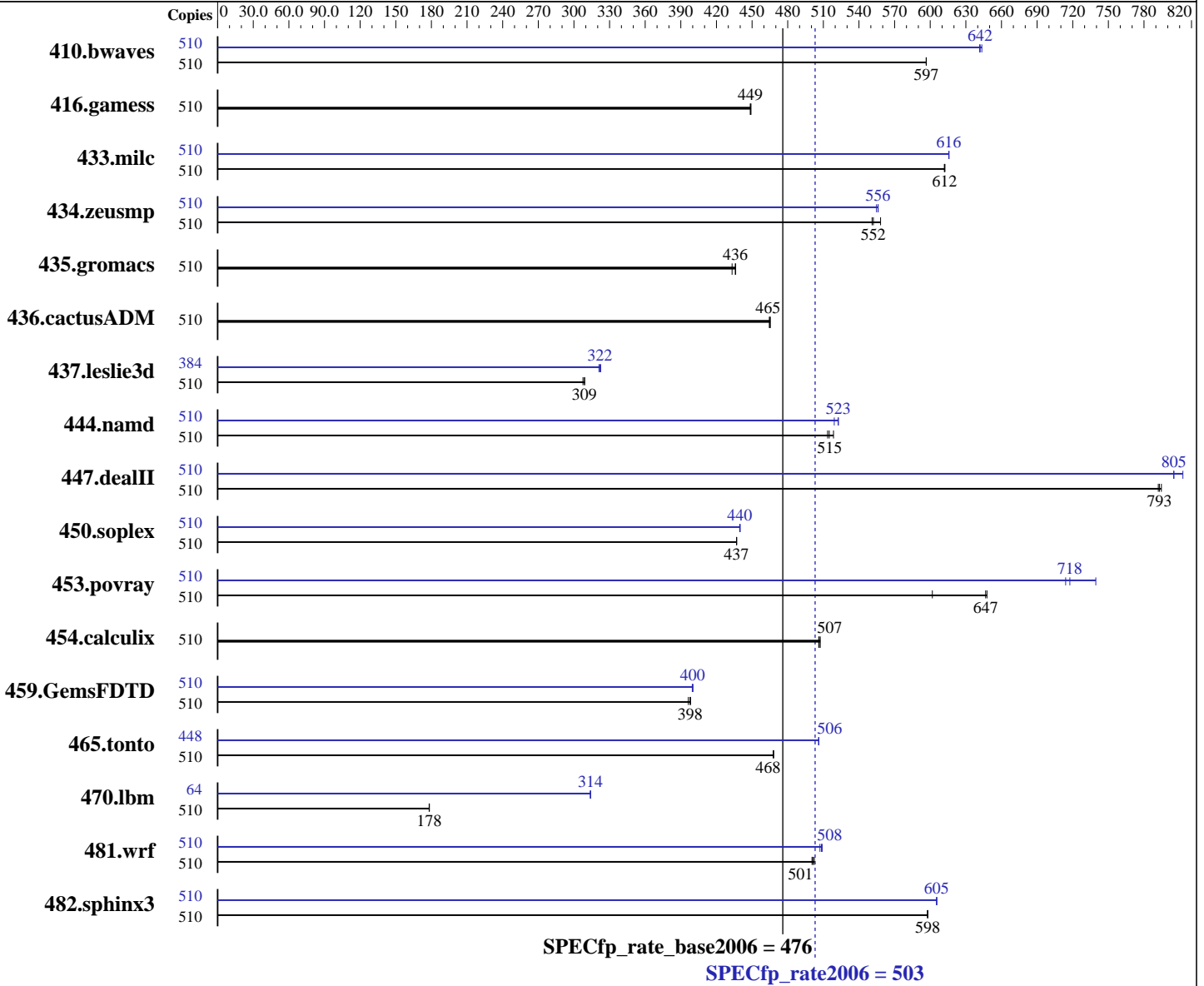
Test sponsor: Oracle Corporation

Tested by: Oracle Corporation

Test date: Aug-2010

Hardware Availability: Dec-2010

Software Availability: Sep-2010



Hardware

CPU Name: SPARC T3
 CPU Characteristics:
 CPU MHz: 1649
 FPU: Integrated
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip, 8 threads/core
 CPU(s) orderable: 1 to 4 chips
 Primary Cache: 16 KB I + 8 KB D on chip per core
 Secondary Cache: 6 MB I+D on chip per chip

Continued on next page

Software

Operating System: Oracle Solaris 10 9/10
 Compiler: Oracle Solaris Studio 12.2
 Auto Parallel: No
 File System: zfs with gzip compression
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32-bit
 Other Software: None



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L3 Cache: None
Other Cache: None
Memory: 512 GB (64 x 8 GB)
Disk Subsystem: 821 GB (zfs 3 x 2-way mirrors on 6x SAS 300G 10000 RPM)
Other Hardware: None

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	510	11615	597	11614	597	11618	597	510	10771	643	10803	642	10795	642		
416.gamess	510	22263	449	22236	449	22257	449	510	22263	449	22236	449	22257	449		
433.milc	510	7647	612	7652	612	7646	612	510	7602	616	7605	616	7604	616		
434.zeusmp	510	8314	558	8406	552	8422	551	510	8366	555	8347	556	8345	556		
435.gromacs	510	8355	436	8348	436	8407	433	510	8355	436	8348	436	8407	433		
436.cactusADM	510	13120	465	13107	465	13096	465	510	13120	465	13107	465	13096	465		
437.leslie3d	510	15585	308	15513	309	15522	309	384	11243	321	11211	322	11190	323		
444.namd	510	7964	514	7888	519	7943	515	510	7827	523	7878	519	7827	523		
447.dealII	510	7358	793	7342	795	7366	792	510	7246	805	7248	805	7179	813		
450.soplex	510	9736	437	9731	437	9736	437	510	9677	440	9673	440	9667	440		
453.povray	510	4509	602	4188	648	4196	647	510	3800	714	3669	739	3781	718		
454.calculix	510	8314	506	8306	507	8292	507	510	8314	506	8306	507	8292	507		
459.GemsFDTD	510	13604	398	13588	398	13654	396	510	13521	400	13527	400	13540	400		
465.tonto	510	10720	468	10725	468	10725	468	448	8713	506	8708	506	8708	506		
470.lbm	510	39308	178	39319	178	39349	178	64	2800	314	2801	314	2802	314		
481.wrf	510	11338	502	11363	501	11384	500	510	11233	507	11192	509	11205	508		
482.sphinx3	510	16626	598	16631	598	16623	598	510	16418	605	16415	606	16422	605		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Invocation Notes

Oracle Solaris Studio 12.2 is distributed with mandatory OS patches
118683-05 119963-20 120753-08
Oracle Solaris Studio 12.2 and patches are available at
<http://oracle.com/goto/solarisstudio>

Submit Notes

Processes were bound to cores using "submit" and "pbind". The config file option 'submit' was used in order to accomplish this.



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Operating System Notes

ulimit -s 131072 was used to limit the space consumed by the stack (and therefore make more space available to the heap).

/etc/system parameters

autoup=600

Causes pages older than the listed number of seconds to be written by fsflush.

tune_t_fsflushr=10

Controls how many seconds elapse between runs of the page flush daemon, fsflush.

lpg_alloc_prefer=1

Indicates that extra effort should be taken to ensure that pages are created in the nearby lgroup (NUMA location).

tsb_rss_factor=128

Suggests that the the size of the TSB (Translation Storage Buffer) may be increased if it is more than 25% (128/512) full. Doing so may reduce TSB traps, at the cost of additional kernel memory.

zfs:zfs_arc_max=0x10000000

zfs:zfs_arc_min=0x10000000

Limits the consumption of memory by the zfs file system cache to 256 MB. (The arc_max sets the maximum cache size; arc_min sets the minimum.)

zfs:zfs_prefetch_disable = 1

Indicates that prefetching is not desired. This setting may be desirable when the file system cache is small.

USB devices were turned off with ILOM command

set /SYS/MB/USB component_state=disabled

The "webconsole" service was turned off using

svcadm disable webconsole

The system had 437 GB of swap space.

Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90



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Base Optimization Flags

C benchmarks:

```
-g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2  
-xalias_level=std -M /usr/lib/ld/map.bssalign
```

C++ benchmarks:

```
-g0 -library=stlport4 -fast -fma=fused -xipo=2 -xpagesize=4M  
-xprefetch_level=2 -xdepend -xalias_level=compatible  
-M /usr/lib/ld/map.bssalign
```

Fortran benchmarks:

```
-g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2  
-M /usr/lib/ld/map.bssalign
```

Benchmarks using both Fortran and C:

```
-g -fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M  
-xprefetch_level=2 -xalias_level=std -M /usr/lib/ld/map.bssalign
```

Base Other Flags

C benchmarks:

```
-xjobs=32 -V -#
```

C++ benchmarks:

```
-xjobs=32 -verbose=diags,version
```

Fortran benchmarks:

```
-xjobs=32 -V -v
```

Benchmarks using both Fortran and C:

```
-xjobs=32 -V -# -v
```

Peak Compiler Invocation

C benchmarks:

```
cc
```

C++ benchmarks:

```
CC
```

Fortran benchmarks:

```
f90
```

Benchmarks using both Fortran and C:

```
cc f90
```



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Peak Optimization Flags

C benchmarks:

```
433.milc: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
-xprefetch_level=2 -xprefetch_auto_type=indirect_array_access
-xalias_level=std -fsimple=1
```

```
470.lbm: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -M /usr/lib/ld/map.bssalign -xprefetch_level=3
-xipo=2 -xrestrict
```

```
482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -M /usr/lib/ld/map.bssalign -xinline=
-xprefetch_level=2 -Wc,-Qlp-ol=1 -xrestrict
-xalias_level=strong -fsimple=1 -xlinkopt=2 -lfast
```

C++ benchmarks:

```
444.namd: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign -xprefetch_level=1 -xlinkopt=2
```

```
447.deallI: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign -xipo=2 -xrestrict
```

```
450.soplex: -g0 -library=stlport4 -fast -fma=fused -xipo=2
-xpagesize=4M -xprefetch=no%auto -xdepend
-xalias_level=compatible -M /usr/lib/ld/map.bssalign
```

```
453.povray: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign -xipo=2 -xrestrict -xlinkopt=2
```

Fortran benchmarks:

```
410.bwaves: -g -fast -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=3 -M /usr/lib/ld/map.bssalign
```

```
416.gamess: basepeak = yes
```

```
434.zeusmp: -g -fast -fma=fused -xpagesize=4M
-M /usr/lib/ld/map.bssalign -xipo=1
-qoption cg -Qeps:enabled=1 -qoption cg -Qeps:ws=8 -lmopt
```

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Peak Optimization Flags (Continued)

437.leslie3d: -g -fast -fma=fused -xpagesize_heap=4M
-xpagesize_stack=64K -M /usr/lib/ld/map.bssalign
-xprefetch_level=3 -xprefetch=latx:1.6 -qoption cg -Qlp=1
-qoption cg -Qlp-fa=0 -qoption cg -Qlp-fl=1
-qoption cg -Qlp-av=448 -qoption cg -Qlp-t=4

459.GemsFDTD: -g -fast -fma=fused -xipo=2 -xpagesize=4M
-xprefetch=no%auto -M /usr/lib/ld/map.bssalign

465.tonto: -g -fast -fma=fused -xpagesize=4M
-M /usr/lib/ld/map.bssalign -xipo=2 -lfast

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-fma=fused -xpagesize=4M -M /usr/lib/ld/map.bssalign
-xlinkopt=2

Peak Other Flags

C benchmarks:
-xjobs=32 -V -#

C++ benchmarks:
-xjobs=32 -verbose=diags,version

Fortran benchmarks:
-xjobs=32 -V -v

Benchmarks using both Fortran and C:
-xjobs=32 -V -# -v

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.2-SPARC.20110110.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.2-SPARC.20110110.xml>



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